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286 Sydney Rd Balgowlah - Geotechnical report for DA

Geotechnical reporting on this site for the proposed project, does not require any testing or trial excavations or bore holing because the expected conditions and the geotechnical suitability of the site for the proposed building, are evident from a simple site inspection. The proposed building loads will be similar to the existing building loads.

The site geotechnical conditions relate to

- Excavation methods
- Safe excavation face angles
- Long term Ground water control
- Building loads

Excavation methods

The site will allow an excavator up to about 30 tonnes for demolition, excavation and services trenching although an excavator of about half that size would be more flexible
The upper 0.6m of excavation on the site will be soil and broken rock fill , excavatable with toothed bucket, except where existing building footings have been excavated to rock.
At depths below 0.6m, excavation will (at worst) be sandstone with irregular bedding planes and irregular joints. Rock excavation will be done using percussive methods (rock hammering) for a maximum depth of about 1m where the proposed Level 0 footprint extends beyond the footprint of the existing lower level footprint.

The site soil and rock fill is the product of excavation for the existing house. The soil component will have an angle of internal friction of about 35deg. As stated on drawings showing the 235mm sewer located on the northern part of the site, the soil and rock fill mix is such that a 45deg Zone of Influence (to avoid loading the sewer) would be very conservative, but is nevertheless provided.

Safe excavation face angles

The upper 0.6m will be battered at about 45 deg. Below that depth, excavation faces will be semi vertical.

Long term Ground water control

Groundwater inflow to the excavation from the excavation faces excluding the pool wall, will be minor because the site is so close to the top of the Sydney Rd ridge. Groundwater inflow will be dependent on prior weather. A 'behind the wall' subsoil drainage system will be required at Level 0, with piped relief to the north. The subsoil drainage system needs to exclude eroded silt and/or be capable of occasional inspection and clean out.

Building loads

The building within the excavation (ie. Floor, Walls and Ground Level Roof Slab) will impose a net load of about 90kPa (about 0.1mPa) , whilst the unconfined compressive strength of the rock on which the building will be founded will be at least 20mPa

Supervision

As an experienced Civil/Structural design engineer, I expect to be carrying out a 'normal' degree of monitoring of the excavation.

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